

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for carefully considering this application.

Disposition of Claims

Claims 1-36 were pending in this application. Claims 3 and 20 have been cancelled by this reply without prejudice or disclaimer. Claims 1 and 19 are independent. The remaining claims depend, directly or indirectly, from claims 1 and 19.

Drawings

Applicant thanks the Examiner for indicating that the drawings filed on November 14, 2003, are acceptable.

Claim Amendments

Claims 1-2, 4-5, 8-9, 12-13, 16-17, 19, 21-23, 26-27, 30-31, and 34-35 have been amended to clarify the invention and correct minor typographical errors. Support for these amendments may be found, for example, in paragraphs [0002] and [0030]-[0034] of the specification of the referenced application. No new matter has been added by way of these amendments.

Claim Objections

Claims 1 and 19 have each been amended to including the term "tracing" in

the body of the respective claims. Further, claims 5, 9, 13, 17, 23, 27, 31, and 35 have been amended to include the complete spelling of the terms to which the acronym "CS" corresponds. In view of the above amendments, the objections to claims 1, 5, 9, 13, 17, 19, 23, 27, 31, and 35 are now moot. Accordingly, withdrawal of the objections is respectfully requested.

Rejection(s) under 35 U.S.C § 101

Claims 1-36 are rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Claims 3 and 20 have been cancelled in this reply. Accordingly, this rejection is now moot with respect to claims 3 and 20. Claims 1-2, 4-5, 8, 12, 16, 19, 21-23, 26, 30, and 34 have been amended in this reply. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

Independent claims 1 and 19 have been amended to clarify the following: (i) a tracing framework performs a tracing operation associated with the trap instruction to obtain tracing information, and (ii) the tracing information is used to analyze the instrumented program. Applicant asserts that using the tracing information to analyze a program is clearly a useful, concrete, and tangible result. Claims 2-18 and 20-36, which depend from independent claims 1 and 19, produce a useful, concrete, and tangible result for at least the same reasons as independent claims 1 and 19. Accordingly, withdrawal of this rejection is respectfully requested.

Applicant further asserts that the rejection of dependent claims 2-18 and 20-36 based on the rejections of independent claims 1 and 19 is wholly improper. Specifically, the Examiner asserts that dependent claims 2-18 and 20-36 depend from independent

claims 1 and 19, and as a result, “suffer the same rejection.” Applicant respectfully asserts that dependent claims 2-18 and 20-36 should be given consideration independently of claims 1 and 19 because dependent claims 2-18 and 20-36 may contain additional limitations that *do* produce a useful, concrete, and tangible result. Rejection of an independent claim as being directed to non-statutory subject matter does not preclude the presence of statutory subject matter in a dependent claim. Applicant asserts the rejections of claims 2-18 and 20-36 are improper omnibus rejections and respectfully requests withdrawal of the improper rejections. If the Examiner intends to maintain the rejection, Applicant requests that the Examiner properly address claims 2-18 and 20-36.

Rejection(s) under 35 U.S.C § 112

Claims 1-36 are rejected under 35 U.S.C. § 112 as being indefinite. Claims 3 and 20 have been cancelled in this reply. Thus, this rejection is now moot with respect to Claims 3 and 20. Claims 1-2, 4-5, 8, 12, 16, 19, 21-23, 26, 30, and 34 have been amended in this reply. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

Claims 1, 2, 4, 8, 16, 19, 21-22, 26, 30, and 34 have been amended to recite an “original instruction” in lieu of an “instruction.” Applicant asserts that the terms “original instruction” and “trap instruction” are distinct as recited in the claims and described in the specification. Thus, the claims, as amended, particularly point out and distinctly claim the subject matter of the invention. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection(s) under 35 U.S.C § 102

Claims 1-36 are rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent 7,065,633 B1 (“Yates”). Claims 3 and 20 have been cancelled in this reply. Thus, this rejection is now moot with respect to claims 3 and 20. Claims 1-2, 4-5, 8, 12, 16, 19, 21-23, 26, 30, and 34 have been amended in this reply. To the extent that this rejection may still apply to the amended claims, the rejection is respectfully traversed.

Turning to the rejection, “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). (MPEP § 2131). In addition, “the identical invention must be shown in as complete detail as the claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). Furthermore, “the elements must be arranged as required by the claim” (See MPEP 2131).

Applicant asserts that Yates does not anticipate *each and every element* of the claimed invention *arranged as required by the claim*. Specifically, with respect to claim 19, Applicant asserts that Yates fails to disclose at least the following limitations: (i) “an instrumented program comprising at least one trap instruction associated with an original instruction, wherein the original instruction relates to creating or dismantling a stack frame; (ii) a thread configured to execute the instrumented program; and (iii) a trap handler configured to halt execution of the thread when the trap instruction is encountered during tracing of the instrumented program, call into a tracing framework to perform a tracing operation associated with the trap instruction, and to emulate the

original instruction associated with the trap instruction.” Each of the aforementioned limitations is discussed below.

1. Instrumented program comprising at least one trap instruction associated with an original instruction, wherein the original instruction relates to creating or dismantling a stack frame

The Examiner asserts the above element is anticipated by “a trap instruction” found on col. 94, line 15 of Yates, as well as “if the program creates code in writable storage (stack or heap) on the fly,” found on col. 40, lines 16-17 of Yates. However, Yates is completely silent with regard to an *instrumented program* that includes *at least one trap instruction* and an *association* of the trap instruction with an original instruction. Yates merely describes a trap instruction that “transfers control to an exception handler for a TAXi_EXIT exception” (See col. 92, lines 15-16). There is no mention of an instrumented program that includes the trap instruction, *or* of an associated original instruction.

2. A thread configured to execute the instrumented program

As mentioned above, the Examiner has failed to cite an “instrumented program” in Yates. Similarly, the Examiner cites col. 6, lines 19-20 of Yates, which states “the operating system and the interrupted thread may execute in different instruction set architectures of the computer.” Once again, there is no mention of an instrumented program. Instead, Yates describes two threads that may execute in different instruction set architectures, which do not anticipate a thread configured to execute an instrumented program.

3. A trap handler configured to halt execution of the thread when the trap instruction is encountered during tracing of the instrumented program, call into a tracing framework to perform a tracing operation associated with the trap instruction

The Examiner cites a “trap handler” in col. 125, line 52 of Yates. However, the trap handler as disclosed in Yates does *not* include functionality to halt execution of a thread when a trap instruction is encountered during tracing of an instrumented program. Instead, the Examiner cites a “collection of interrupt service routines programmed to emulate instructions” and a method of handling interrupts in Yates (*See* col. 23, lines 13-15 and col. 51, lines 34-42). Applicant asserts that Yates is completely silent with regard to a trap handler that *halts execution* of a thread when a *trap instruction* is encountered.

Specifically, a set of three citations that disclose (i) a trap handler, (ii) emulation of instructions by interrupts, and (iii) handling interrupts does *not* anticipate a trap handler that is *configured to halt execution* of a thread when a *trap instruction* is encountered during *tracing of an instrumented program*. Furthermore, Yates is completely silent with respect to a *tracing framework* that performs a *tracing operation associated with the trap instruction*, as instruction emulation using interrupts and interrupt handling is completely irrelevant to a tracing framework that performs a tracing operation associated with a trap instruction.

In view of the above, Yates fails to disclose all the limitations recited in amended independent claim 19. Thus, amended independent claim 19 is patentable over Yates. Further, amended independent claim 1 includes at least the same patentable

limitations as amended independent claim 19 and, thus, is also patentable over Yates for at least the same reasons as amended independent claim 19. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Additionally, Applicant notes an error in the Examiner's rejection of claim 1. With respect to claim 1, the Examiner states that "Yates discloses a method for tracing an instrumented program, comprising: replacing the instruction with the trap instruction in the instrumented program." The Examiner then skips claim 2 to discuss the elements of claim 3. Applicant asserts that the Examiner has addressed the limitations of claim 2 in the rejection of claim 1, and as a result has not addressed the limitations of claim 1 with respect to the Yates. If the Examiner continues to reject claim 1, Applicant respectfully requests that the Examiner properly address amended independent claim 1 in any subsequent action.


Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 03226/342001).

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Respectfully submitted,

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